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REPORT OF THE UNITED NATIONS EXPERT ON SPACE APPLICATIONS

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INTRODUCTION

1. At its thirtieth session, held in New York from 15 to 26 February 1993, the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space reviewed the activities of the United Nations Programme on Space Applications. The Subcommittee noted that the 1992 activities of the Programme had been carried out satisfactorily, and that the activities scheduled for 1993 had been endorsed by the General Assembly in its resolution 47/67 of 14 December 1992. The Subcommittee recommended to the Committee, for its approval, the activities scheduled for 1994 under the regular budget, and took note of other activities of the Programme, all of which are to be implemented as part of the space-applications-related recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE-82), as proposed by the Expert on Space Applications in his annual report (A/AC.105/533) submitted to the Scientific and Technical Subcommittee at its 1993 session.

I. MANDATE OF THE PROGRAMME

2. The General Assembly, in its resolution 37/90 of 10 December 1982, took into account the recommendations of UNISPACE-82, and expanded the mandate of the Programme to include, in particular, the following activities: (a) provision of assistance in the development of indigenous capability at the local level; (b) provision of long-range fellowships for in-depth training; (c) provision of technical advisory services to Member States and regional institutions upon request; (d) organization of regional and international training courses, seminars, workshops, conferences and technical expert meetings for the benefit of specialists, educators, managers and decision makers in order to enhance their technical capabilities as well as keep them abreast of ongoing developments in the discipline; (e) acquisition and dissemination of space-related information; and (f) promotion of greater cooperation between developed and developing countries, as well as among developing countries. The activities carried out in 1993, those scheduled for implementation in 1994 and those proposed for 1995 are summarized below.

A. Development of indigenous capability

3. The latest efforts of the Programme in assisting the developing countries in building up indigenous capabilities in space science and technology are being channelled towards the development and enhancement of knowledge and skills in the discipline through the establishment and operation of centres for space science and technology education at the regional level. In this connection, the General Assembly, in its resolution 45/72 of 11 December 1990, endorsed the recommendation of the Committee that:

> "... the United Nations should lead, with the active support of its specialized agencies and other international organizations, an international effort to establish regional centres for space science and technology education in existing national/regional educational institutions in the developing countries" (A/AC.105/456, annex II, para. 4 (n)).

4. A progress report (A/AC.105/498) on the establishment of the centres was prepared in early 1992. An updated project document (A/AC.105/534) on the same subject was issued in January 1993.

5. The activities at each centre will be undertaken in two major phases. In phase 1, the emphasis will be on developing and enhancing the knowledge and skills of participants in both the physical sciences and analytical disciplines. Such knowledge will be tested through laboratory exercises and fieldwork over a nine-month period as laid out in the curriculum of the education programme of each centre. Phase 2 will focus on ensuring that the participants make use of the skills and knowledge gained in phase 1 in their pilot projects, which are to be conducted over a one-year period in their own countries. The activities and opportunities provided in the two phases should adequately equip the participants (educators and research and

applications scientists) to introduce relevant aspects of space science and technology into existing education curricula in their countries, and to contribute significantly to development programmes in their countries. Each of the centres for space science and technology education should also: contribute to the sustainable development of natural resources (air, water, land); provide a crucial supplementary input for biodiversity conservation and other related environmental programmes; and improve the overall development of the national technological base, including that of the telecommunications industry.

6. A step-by-step implementation of the programme of each centre in education, research and applications as laid out in the two phases described above should have a multiplying effect which would be accelerated by national motivation and commitment and international cooperation, and should result in the following:

(a) A capacity for each country to enhance its scientific and technical knowledge and experience particularly in those application areas (Earth observation and telecommunications) that have the potential for a greater impact on each country's economic and social development, including the preservation of its environment;

(b) A capacity to utilize data from Earth observation systems for weather prediction and monitoring of hurricanes and other natural phenomena so that appropriate disaster management and mitigation programmes could be undertaken;

(c) A capacity to strengthen institutions of higher education as well as national and regional institutions, and subsequently to enable each country to support research and development efforts in those national institutions, especially those dealing with the understanding and application of environmental information systems;

(d) A capacity for each country to enhance national and regional communication systems, including those associated with rural development, delivery of health services, disaster mitigation, air and maritime navigation, and to establish a network linking the region's professionals and scientists, government establishments and industries, in order to facilitate the exchange of ideas, data and experience;

(e) A capacity to develop appropriate environmental and atmospheric sciences curricula that can be easily taught and demonstrated at the high-school and university level in each country, and to effectively prepare educators to teach classes in those disciplines on their return to their institutions;

(f) A capacity to participate in regional and international environmental programmes such as the International Geosphere-Biosphere Programme and Mission to Planet Earth, and to contribute to the understanding and support of international actions on such issues as global warming and climate change, ozone layer depletion, global deforestation, land degradation and management of the coastal marine environment.

7. The first step in the establishment of the centres is the assessment, through evaluation missions, of the facilities and the resources that would support the programmes of the centres. The status of the missions to each of the areas of the regional commissions of the United Nations is described below.

1. Western Asia

8. As a result of the relocation of the Office of Outer Space Affairs to Vienna, the evaluation mission to Egypt, Jordan and the Syrian Arab Republic has been rescheduled to take place in the second half of March 1994.

2. Asia and the Pacific

9. An evaluation mission to the Islamic Republic of Iran was conducted in August 1993. The results of the mission have been forwarded to the Government of the Islamic Republic of Iran for its attention and necessary follow-up action.

10. In the second quarter of 1994, the evaluation mission to China, India, Indonesia, Pakistan, Thailand and Malaysia will be conducted to: identify areas of need in the region; assess the capabilities of the potential host institutions in each country; determine how the least developed countries in the region can be assisted through the centre; and develop a comprehensive plan that would result in the establishment of the centre for the benefit of the region.

3. Africa

11. The evaluation mission to Africa (Ghana, Kenya, Morocco, Nigeria, Senegal and Zimbabwe) was conducted in 1993. Representatives of the Governments of France and Germany participated in the mission, which consisted of two parts, one to English-speaking and the other to French-speaking countries. The report of the mission has been sent to all the Governments concerned for their attention and follow-up action.

4. Latin America and the Caribbean

12. On the basis of the report of the evaluation mission to the Latin America and the Caribbean region conducted by the Office for Outer Space Affairs, Brazil and Mexico were identified by the Office as the most viable locations where two arms of the regional Centre for Space Science and Technology Education could be established.

13. The United Nations subsequently invited the Governments of Brazil and Mexico to participate in meetings of high-level technical managers from the institutions that had offered to host the Centre. The first meeting, which was held at United Nations Headquarters on 20 September 1993, considered, inter alia, the establishment of the Centre, including its headquarters and the composition of its Governing Board. The meeting also discussed the mechanisms that would, in future, allow the integration of institutions from other countries of the region into the Centre.

14. On 21 September 1993, a second meeting was held and was attended by high-level technical managers representing institutions in Argentina, Brazil, Chile and Mexico that had offered to host the Centre. Broad participation was encouraged in order to develop a clear definition of the regional character and status of the Centre with emphasis on its future growth, including the establishment in other countries of complementary programmes emphasizing discipline, language and application specialties. At the invitation of the United Nations, representatives of potential donor countries (Canada, France, Spain and the United States of America) also participated in the second meeting.

15. The conclusions of that meeting and those of subsequent meetings held at São José dos Campos, Brazil (29 October 1993), Mexico City (6 and 7 December 1993) and United Nations Headquarters (9 and 10 December 1993) are contained in annex I to the present report.

B. Long-term fellowship programmes for in-depth training

16. The Programme received 17 long-term fellowship offers for the 1992-1993 period from the Governments of Brazil (10) and China (2), and from the European Space Agency (ESA) (5). For the 1993-1994 period, the Programme received 19 long-term fellowship offers from the Governments of Brazil (10) and China (4), and from ESA (5). The status of the 1993-1994 awards is reflected in annex II of the present report. The

fellowship awards cover monthly allowances for room and board, books, local travel and health benefits. The offers are described below in further detail.

17. The 10 long-term fellowships offered by the Government of Brazil are for research and applications in remote-sensing technology and are tenable at the Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos, Brazil. The seventh set of participants in this fellowship series were selected from the region of the Economic and Social Commission for Latin America and the Caribbean (ECLAC); they completed their nine-month training at INPE on 5 November 1993. The next set of participants will also be selected from among candidates from the ECLAC region and will commence their studies in April 1994.

18. The four fellowships offered by the Government of China, each for a period of one year, are for research and training in geodesy, photogrammetry and remote sensing. The fellowships are tenable at Wuhai Technical University of Surveying and Mapping, Wuhai, China.

19. The five ESA long-term fellowships are each for a period of one year of research and study at ESA institutions and in the disciplines described below:

(a) Space antennae and propagation: European Space Research and Technology Centre, Noordwijk, Netherlands;

(b) Communications systems: European Space Research and Technology Centre, Noordwijk, Netherlands;

(c) Remote-sensing information systems: European Space Research Institute, Frascati, Italy;

(d) Satellite meteorology: European Space Operations Centre, Darmstadt, Germany;

(e) Remote-sensing instrumentation: European Space Research and Technology Centre, Noordwijk, Netherlands.

C. Technical advisory services

1. Stations at Maspalomas and Fucino

20. In 1991, the United Nations and ESA jointly selected a number of projects that could benefit from data acquired by two ESA ground-receiving stations at Maspalomas, Spain, and Fucino, Italy, and held in ESA archives.

21. The aim of the assistance provided by the United Nations and ESA is to make available historical, current and future data acquired by different satellites so that they may be used to support development programmes in different application projects, particularly irrigation, roads, water resources, land use, forestry and agriculture in the countries concerned. Currently, the beneficiaries of the programme are Guinea, Morocco, Nigeria and Tunisia. ESA is providing remote-sensing data in hard-copy prints, films and computer-compatible tapes to the scientists in those countries.

22. At the conclusion of the ongoing projects, the scientists concerned will be invited to ESA facilities at Frascati, Italy, to present the results of their work as well as to undergo the necessary training in the use of European Remote Sensing Satellite (ERS-1) data in relevant application projects in their countries.

2. Cotopaxi station

23. As a follow-up activity to the Workshop on Space Technology for Resource Development and Environmental Management, held at Quito in March 1992 (see A/AC.105/525), the United Nations is working very closely, on request, with the Government of Ecuador in order to promote cooperation between the Government of Ecuador and all the countries that are within the coverage area of the Cotopaxi ground-receiving station. Such cooperation, with its financial implications, can be achieved through appropriate consultations with the Governments of those countries. The consultations should lead to an agreement which should ensure the continuous operation of Cotopaxi station and the acquisition and delivery of data to the countries concerned.

24. In this connection, and at the request of the Government of Ecuador, the United Nations, through the Programme on Space Applications, conducted a mission in March 1993 to Colombia, Ecuador, Peru and Venezuela, four of the countries that are covered by the Cotopaxi station. The mission also met with officials of the Junta del Acuerdo de Cartagena (JUNAC) at Lima and of the Corporación Andina de Fomento (CAF) at Caracas.

25. The mission was conducted from 1 to 6 March 1993. Participants met with representatives of the four above-mentioned countries, CAF, JUNAC and the Caribbean Community (CARICOM), in order to review the possibilities and modalities under which the Cotopaxi station could be operated cooperatively within a regional framework and to evaluate its current status. The evaluation mission addressed technical, personnel, data distribution and financial issues associated with the operation of the station. In each of the countries visited, mission participants held discussions with senior officials of the leading institutions which are to participate in the planned regional enterprise.

26. The mission concluded that government awareness of the value of satellite data in national development had led the Andean Group (Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela) to take, at a high political level, a number of steps towards the establishment of a regional enterprise. The mission further concluded that a positive atmosphere, in which a regional entity with private-enterprise characteristics could be established to operate the Cotopaxi station in all its aspects, appeared to exist.

27. The mission recommended that the Governments within the Andean Group should take further steps to ensure that a working group is established as soon as possible to: strengthen the use of data available at the Cotopaxi station, through national or regional projects; determine and advise the Governments on the necessary technical upgrades to the station; and undertake other short- and medium-term action necessary to guarantee the continuous operation of the station and the maintenance of a regional data archive. As a first step in achieving these goals, the mission recommended that a meeting of all interested parties should be convened at the earliest opportunity by JUNAC, in cooperation with CAF. The report of the mission has been submitted to the Governments of the four countries visited as well as to JUNAC, CAF and CARICOM for their consideration.

3. Chile

28. At the request of the Government of Chile, the Programme on Space Applications assisted in the overall planning and organization of the Second Space Conference of the Americas, which was held at Santiago from 26 to 30 April 1993, and prepared a document containing the submissions of Member States in the Latin America and the Caribbean region on those applications that are in harmony with the concept of sustainable development. The document also highlighted the space-related activities being undertaken in the Latin American and the Caribbean region by the United Nations system to meet the goals of Agenda 21, as adopted by the United Nations Conference on Environment and Development.

29. The Conference produced the "Santiago Declaration" which, among other things, established a pro tempore secretariat to follow up and provide continuity to the outcome of the Conference. Initially, a regional project that will address elements contained in Agenda 21 is being planned. The project will include a number of components, and reflect themes in which at least three Governments indicated their intention to conduct cooperative activities. A second regional project will establish a database of specialists in space sciences in Latin America and the Caribbean and of projects that are being conducted in the region. A third regional project will establish communication links between specialists and institutions in the region. At the request of the Government of Chile, the host to and headquarters of the pro tempore secretariat, the Programme will provide support to follow up these and other recommendations of the Conference.

4. Republic of Korea

30. One of the major outcomes of the United Nations/Korea Workshop on Satellite Communications for Development held at Seoul in November 1992 was the agreement, in principle, to establish an Asia-Pacific Satellite Communications Conference (APSCC). In the view of States in the region, such an organization is vital for the coordination and implementation of satellite communication programmes to meet the growing demand for such services in the Pacific region. At the request of the Workshop, the Office for Outer Space Affairs (Programme on Space Applications) communicated this decision to the Governments of the Asia and the Pacific region for their endorsement. The decision was also communicated to the International Telecommunication Union (ITU).

31. ITU agreed that such a conference could be a useful vehicle for continuing exchange of information on proposals and plans for satellite communications in the region, and expressed its willingness to cooperate in such an initiative. As of January 1994, 21 countries of the region have given written or verbal approval to the establishment of APSCC.

32. The ad hoc committee established during the Workshop convened and drafted the by-laws and procedures of APSCC, and established a temporary secretariat for follow-up action.

33. The ad hoc committee and temporary secretariat of APSCC are planning to hold the 1994 Asia Pacific Workshop on Satellite Communication in November 1994 at Seoul. The Programme will assist in the organization of the Workshop.

D. United Nations training courses, workshops, conferences and symposia

1. Activities carried out in 1993

34. In 1993, the United Nations conducted three training courses, three workshops and two regional conferences under the auspices of the Programme. A summary of each of these activities is presented below.

Frascati, Italy: United Nations/ESA Training Course for African Francophone Countries on Applications of ERS-1 Data for Natural Resources, Renewable Energy and the Environment

35. The Programme continues to cooperate with other bodies within the United Nations system, including the Secretariat, in the implementation of its activities (see A/AC.105/513, annex II, para. 19 (c)). Specifically, the Programme cooperated with the Department for Development Support and Management Services (DSMS) to organize the United Nations/ESA Training Course for African Francophone Countries on Applications of ERS-1 Data for Natural Resources, Renewable Energy and the Environment, held from 19 to 30 April 1993 at the ESA European Space Research Institute (ESRIN) at Frascati, Italy. Funding (travel and per diem for participants and lecturers) for the course was provided by the United Nations Trust Fund for New and

Renewable Sources of Energy. Similar arrangements will enable the Programme and DSMS to organize in April 1994 the Second United Nations/ESA Training Course on Applications of the European Remote Sensing Satellite (ERS-1) for Natural Resources, Renewable Energy and Environment in 1994 for States in the ECLAC region.

36. The Course provided the participants with the physical theory on which both active and passive remote sensing is based. It presented an overall view of remote sensing in various bands of the electromagnetic spectrum, including the visible, infrared and microwave regions of the spectrum. Aspects of the Course also included the theory and concepts of synthetic aperture radar image formation and an introduction to digital image processing of radar data in oceanographic, geologic, topographic and cartographic applications.

37. The Course was attended by 24 participants from the following countries and regional institutions: Algeria, Angola, Benin, Burundi, Cameroon, Central African Republic, Chad, Comoros, Côte d'Ivoire, Egypt, Guinea, Guinea-Bissau, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia, Zaire; AGRHYMET (Niamey), Ouagadougou Regional Remote Sensing Centre (CRTO) and Regional Centre for Surveying Services, Mapping and Remote Sensing (Nairobi). The programme of the Course was developed jointly by ESA and the Office for Outer Space Affairs. The instructors for the Course came from France, CRTO and ESA. A detailed report on the Course is contained in document A/AC.105/556.

Stockholm and Kiruna, Sweden: Third United Nations Training Course on Remote Sensing Education for Educators

38. The Third United Nations Training Course on Remote Sensing Education for Educators, organized in cooperation with the Government of Sweden, was held from 3 May to 4 June 1993 at the University of Stockholm and SSC Satellitbild, Kiruna, for participants from developing countries.

39. The main objective of the Course was to provide education and practical hands-on experience to participants with current and future remote-sensing systems, including the acquisition, processing, interpretation, applications and archiving of the data generated by such systems, as well as to equip them with the ability to introduce elements of the technology, as appropriate, in the curricula of their universities and institutes. The programme of the Course was designed jointly by the Office for Outer Space Affairs, the University of Stockholm and SSC.

40. The Government of Sweden, through the University of Stockholm, SSC Satellitbild and the Swedish Board for Investment and Technical Support (BITS), coordinated local arrangements and provided technical equipment, materials, Course facilities, local transportation and professional services of instructors. Funds allocated by the United Nations were used to defray the costs of international air travel for 12 participants. On behalf of the Government of Sweden, BITS provided room and board, local transportation and an allowance for incidental expenses for all the participants as well as international air travel for 14 participants.

41. Twenty-six educators from universities and colleges in the following countries of Africa, Asia and Latin America participated in the Course: Bangladesh, Bolivia, Chile, Costa Rica, Ecuador, Ghana, Jordan, Kenya, Madagascar, Malawi, Malaysia, Mauritius, Micronesia (Federated States of), Nepal, Nigeria, Sri Lanka, Thailand, Uganda, Uruguay, Venezuela, Viet Nam and Zimbabwe. In addition to the Swedish instructors, experts from Germany, Norway and ESA provided instruction at the Course. The report on the Course is contained in document A/AC.105/552.

Athens: United Nations Workshop on Space Communications for Development

42. The United Nations Workshop on Space Communication for Development was organized in cooperation with the Government of Greece as part of its contribution to International Space Year (ISY) activities. The

Workshop was hosted by the Ministry of Foreign Affairs through the Eugenides Foundation and the Hellenic Telecommunication Organization, and held at Athens from 10 to 12 May 1993 for participants from the Mediterranean and adjacent areas. Forty-seven experts from 22 Member States of the United Nations, 10 international organizations and two private companies participated in the Workshop.

43. The Workshop addressed the current state and future trends of satellite communication technologies and their contributions to economic and social development, and possible regional and international cooperative activities. Through the exchange of views among managers and specialists, the Workshop evaluated the merits of and problems associated with tele-education and personal communication. It also cautioned against the investment of scarce resources in mobile communication at the expense of fixed satellite communications services, particularly in the developing countries, and against investments in technologies that are searching for users, since specific infrastructure for the new communication mode is still undergoing rapid and dynamic evolution. The Workshop called on countries in the Mediterranean and adjacent areas to guard against the proliferation of national communication satellites, since this could result in frequency interference. At the request of Workshop participants, the Programme on Space Applications agreed to develop a booklet that would focus on all elements of tele-education, including the logistics of developing such a programme in a given country.

44. The funds provided by the United Nations and the Government of Greece for the Workshop were used to cover the cost of international air travel and a daily subsistence allowance for 26 participants from developing countries. Conference facilities and local transportation were provided by the Ministry of Foreign Affairs of Greece, the Eugenides Foundation and the Hellenic Telecommunication Organization. The Workshop was attended by participants from the following countries, international organizations, institutions and private companies: Albania, Algeria, Azerbaijan, Belarus, Bulgaria, Cyprus, Egypt, Germany, Greece, Israel, Lebanon, Malta, Morocco, Romania, Syrian Arab Republic, Turkey, Ukraine; Office for Outer Space Affairs, Arab Telecommunications Union, ESA, European Telecommunications Satellite Organization (EUTELSAT), International Maritime Satellite Organization (INMARSAT), ITU; Centre for National Communication Studies, Hellenic Telecommunications Organization, Hispasat, Indian Space Research Organization; Alenia Spazio and Telespazio. A detailed report on the Workshop is contained in document A/AC.105/553.

Bandung, Indonesia: United Nations/Indonesia Regional Conference on Space Science and Technology for Sustainable Development

45. The United Nations/Indonesia Regional Conference on Space Science and Technology for Sustainable Development was jointly sponsored and organized by the United Nations and the Government of Indonesia, and hosted by the Indonesian International Space Year Committee. The Conference was held in Bandung, Indonesia, from 17 to 21 May 1993.

46. The Conference concluded that countries in the region should give the highest priority to the development of human resources and necessary infrastructure within their own borders, so that they could effectively make use of space technology in their social and economic development programmes. The centres for space science and technology education being planned by the United Nations were seen as one of the major vehicles for achieving that objective. The Conference noted that space activities were very expensive and that economic realities demanded regional cooperation. It also noted that there was a need for countries within the region to share their expertise and resources. The Conference identified a number of programmes that should be of primary interest to the region, including: the Global Encyclopedia (GEOSCOPE) developed by Canada; the installation in every country of a functional high-resolution picture transmission station; the joint establishment and operation of a telescope with a diameter greater than 4 metres for the benefit of the region; the initiation of a major atmospheric science programme in each country; and the development of a network which could facilitate the exchange of information among the professionals and practitioners in the

field of space science and technology in the region. A special session of the Conference was devoted to stimulating the interest of the youth of Indonesia in space science and technology.

47. The Conference was attended by 182 experts and scientists from the following countries, international organizations and institutions: Australia, Bangladesh, Canada, China, Denmark, France, Germany, India, Indonesia, Japan, Malaysia, Netherlands, Pakistan, Singapore, Thailand, United States of America; Office for Outer Space Affairs, United Nations Educational, Scientific and Cultural Organization (UNESCO), ITU; Tongasat. The Government of Indonesia and the United Nations provided financial assistance to 11 selected participants to cover the costs of international air travel and room and board. The Government, through the Indonesian Space Agency (LAPAN), was responsible for the organization of the Conference; it provided all facilities for the Conference, local ground transportation and luncheons and dinners, as well as cultural events throughout the Conference. A detailed report on the Conference is contained in document A/AC.105/557.

Mexico City: United Nations/ESA Workshop on Applications of Space Techniques to Prevent and Combat Natural Disasters

48. The United Nations/ESA Workshop on Applications of Space Techniques to Prevent and Combat Natural Disasters was organized in cooperation with the Government of Mexico for ECLAC member States. The workshop was co-sponsored by ESA and the Instituto Mexicano de Comunicaciones, and held at the National Autonomous University of Mexico, Mexico City, from 27 to 30 September 1993. Sixty-nine experts from 19 member States and five international and regional organizations participated in the workshop; 57 of the participants came from 17 developing countries of the ECLAC region.

49. The objectives of the workshop were: to expose the participants, particularly managers of emergency response agencies, to the ways and means through which space technology (remote sensing, satellite meteorology, satellite communications, positioning by satellites) could be utilized to prevent natural disasters or mitigate their effects; and to address the development of databases and Geographic Information Systems (GIS) for use in the prevention of disasters and monitoring, mitigating and redressing the effects of disasters when they occur. The presentations at the workshop addressed the importance of remote sensing, satellite meteorology, satellite positioning systems and satellite communications and how they could be used, separately or collectively, to achieve these objectives, including those associated with regional phenomena such as drought and flooding, hurricanes, El Niño, earthquakes and volcanic eruptions. The workshop noted that many of the national emergency response systems are not aware of the full spectrum of applications of space technology. The workshop agreed, inter alia, that a network of focal points should be established in the region, at the earliest opportunity, in order to disseminate space-related information among themselves. Such a network could also provide emergency services through which communication with the international emergency relief community could be established.

50. Funds provided by the United Nations and ESA were used to defray the costs of air travel and an allowance for incidental expenses for 19 participants from 16 developing countries of the ECLAC region. Through the Instituto Mexicano de Comunicaciones, the Government of Mexico provided room and board for all the participants from developing countries. The Government also provided necessary conference facilities and local transportation for all participants in the Workshop. The Workshop was attended by participants from the following countries and international organizations: Argentina, Barbados, Bolivia, Canada, Chile, Colombia, Ecuador, France, Guatemala, Honduras, Jamaica, Mexico, Panama, Paraguay, Peru, Spain, Uruguay, United States of America, Trinidad and Tobago; Department of Humanitarian Affairs, Office for Outer Space Affairs, Caribbean Disaster Emergency Response Agency, CARICOM, ESA and INMARSAT. A detailed report on the Workshop is contained in document A/AC.105/558.

Kathmandu: Fifth United Nations/Carl Duisberg Gesellschaft/ESA/Training Course on Remote-Sensing Applications to Geological Sciences: the Planning and Management of Environment, Natural Resources and Physical Infrastructure

51. The Fifth United Nations/Carl Duisberg Gesellschaft/ESA/Regional Training Course on Remote-Sensing Applications to Geological Sciences: the Planning and Management of Environment, Natural Resources and Physical Infrastructure was organized in cooperation with the Government of Germany through the Carl Duisberg Gesellschaft, and was hosted by the International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, from 10 October to 6 November 1993.

52. The objective of the Course was to provide participants from developing countries with theoretical and practical training in airborne and satellite remote-sensing techniques that are relevant to geological sciences, with emphasis on the planning and management of the environment, natural resources and physical infrastructure. The course enabled the participants to enhance their knowledge of the application of remote sensing in these fields through classroom exercises and fieldwork that were based on projects conducted in the Asia and the Pacific region.

53. The Course was attended by 20 participants from the following countries: Afghanistan, Bangladesh, Bhutan, Cambodia, China, India, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Republic of Korea, Thailand, Uzbekistan and Viet Nam. The United Nations and ESA provided international air travel for 18 of the participants. The Government of Germany, through the Federal Ministry for Economic Cooperation and Development, provided the financial resources for the organization of the Course, and ICIMOD provided all local personnel and facilities. ICIMOD, the Geo-Research Centre Potsdam, the Free University of Berlin and the Federal Institute for Geosciences and Natural Resources, Hanover, coordinated the administration of the Course. Lecturers invited by ICIMOD and the Government of Germany to the Course included specialists from Bangladesh, China, France, Germany, India, Italy, Nepal, Netherlands and Thailand. An interim report on the Course is contained in document A/AC.105/561.

Lagos, Nigeria: Third United Nations/European Space Agency Workshop on Basic Space Science

54. The Third United Nations/European Space Agency Workshop on Basic Space Science was organized in cooperation with the Government of Nigeria. The Workshop was hosted by the National Agency for Science and Engineering Infrastructure, the University of Nigeria, Nsukka, and Obafemi Awolowo University, Ile-Ife, and held at Lagos, Nigeria, from 18 to 22 October 1993. The Workshop was co-sponsored and co-organized by ESA, the German Space Agency (DARA), the International Centre for Theoretical Physics, Trieste, the United States National Aeronautics and Space Administration (NASA), Nigerian Telecommunications (NITEL) and The Planetary Society (TPS).

55. The Workshop was organized with the knowledge that the scientific, economic and social progress of any country is strongly interrelated, and with the recognition that basic space science, including physical and mathematical sciences, plays an exceedingly important role in providing solutions to problems of development in general, and that the pursuit of basic space science is critical to the future economic prosperity of all countries. Thus, the Workshop focused on: (a) creating and improving awareness among scientists of current and future scientific and technical aspects of basic space science; (b) enhancing national capabilities that could be used to develop programmes and to undertake research activities in basic space science; (c) enhancing scientific cooperation internationally and, in particular, among developing countries; (d) addressing how basic space science could be effectively integrated into the programmes of the planned centres for space science and technology education; and (e) exploring avenues of education, training and research on subjects in basic space science. Workshop sessions included topics related to space science education, solar-terrestrial interaction, planetary science, the sun, binary stars, ground-based and space-based astronomical observatories, and space astronomy and astrophysics.

56. The Workshop was attended by 54 scientists from 14 countries and seven national and international organizations. Participating scientists funded by the co-sponsors of the Workshop and by their respective Governments, international organizations, institutions and bodies were from: Argentina, Austria, Canada, Colombia, Germany, Ghana, Honduras, India, Italy, Kenya, Nigeria, South Africa, Spain, United States; Office for Outer Space Affairs; DARA, NASA, NITEL; TPS. Funds allocated by the United Nations, ESA, DARA, NASA, NITEL and TPS for the organization of the Workshop were used to cover the costs of international air travel and a daily subsistence allowance for 18 participants from 14 countries. The Government of Nigeria provided the Workshop facilities, local transportation and room and board for 20 foreign participants throughout the Workshop. An interim report on the Workshop is contained in document A/AC.105/560.

Dakar: United Nations Regional Conference on Space Technology for Sustainable Development in Africa

57. The United Nations Regional Conference on Space Technology for Sustainable Development in Africa was organized with the assistance of the Government of Senegal and the support of the Office of the United Nations Development Programme at Dakar, and was held at Dakar from 25 to 29 October 1993. The Conference was co-sponsored by the Government of France, World Meteorological Organization (WMO), Earth Observation Satellite Corporation (EOSAT), ESA, MacDonald Dettwiler, Telespazio and United States Geological Survey (USGS). Funds provided by the co-sponsors and the United Nations were used to defray the cost of room and board for 38 participants. The United Nations provided conference facilities.

58. The Conference focused, inter alia, on: (a) plans and programmes that could sustain an effective national participation in the development and utilization of environmental information systems, with due consideration given to Agenda 21 of the United Nations Conference on Environment and Development; (b) the role of space technology in the social and economic development of Africa; (c) investment in communications research, development and growth in Africa; (d) privatization and commercialization, with emphasis on production and delivery of services, including those needed for rural communications, education, health care and disaster mitigation; (e) mechanisms for promoting cooperation among relevant African institutions and entities; and (f) development of indigenous capability in space technology at the local level.

59. Other aspects of the Conference included: a panel discussion on space science and technology in Africa, with emphasis on the role Africa and its people should play in the understanding, development and utilization of space technology for their own social and economic development; a poster session which demonstrated the results of projects undertaken in Africa on remote sensing and GIS, as well as those on satellite meteorology; and a youth forum which was attended by over 300 students from Senegalese schools. The goal of the forum was to enhance the interest of the youth of Africa in, and to increase their understanding of, space science and technology, its various applications and the atmosphere.

60. Participating in the Conference were executive-level personnel (policy makers and senior technical advisers, educators, programme managers, and research and application scientists) from 47 African governmental and non-governmental entities with programmes relevant to the theme of the Conference. Other participants included representatives of the following countries, international organizations, institutions and private companies: Canada, France, Spain, United States; Office for Outer Space Affairs, UNDP, the Food and Agriculture Organization of the United Nations (FAO), WMO, World Bank, ESA, the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), INMARSAT, Regional Centre for Services in Surveying, Mapping and Remote Sensing (RCSSMRS), Regional Centre for Training in Aerospace and Surveys (RECTAS); AFRO-VISION, Comsat, NASA, National Centre for Space Studies (France), USGS; EOSAT and MacDonald Dettwiler. A total of 133 participants slipped through the airline strike in Paris and the nationwide strike in Senegal to attend the Conference. The observations and recommendations of the Conference are contained in document A/AC.105/562. ECA has offered to publish the proceedings of the Conference.

2. Activities scheduled for implementation in 1994

61. The training courses, workshops, and symposia scheduled for 1994 are shown in annex III.

3. Activities proposed for implementation in 1995

62. The following training courses, symposium and conferences are proposed for 1995:

(a) The Fifth United Nations/Sweden International Training Course on Remote Sensing Education for Educators (Sweden);

(b) A United Nations/ESA International Microwave Remote Sensing Training Course (Frascati or Turin, Italy);

(c) A United Nations International Training Course on Communications Technology for Development;

(d) The Sixth United Nations Regional Training Course on Remote Sensing Applications to Geological Sciences;

(e) A United Nations Workshop on the Use of Space Techniques for Monitoring and Control of Desert Environment to be held for the benefit of Member States in the region of the Economic and Social Commission for Western Asia;

(f) The Fifth United Nations/ESA Workshop on Basic Space Science, to be organized for Member States in the Asian and the Pacific region;

(g) The Second United Nations Regional Conference on Space Technology for Sustainable Development in Africa;

(h) A United Nations Regional Conference on Space Technology for Sustainable Development in Latin America and the Caribbean (Mexico);

(i) A United Nations/International Astronautical Federation (IAF) Symposium on Space Technology in Developing Countries during the Forty-sixth Congress of IAF, to be held in 1995.

63. Dedicated sessions of the conferences referred to in paragraph 62 (g) and (h) above will address environmental information systems, disaster mitigation, radar technology, telecommunications, experimental and operational small payloads, spin-off benefits of space exploration, basic space science and space-acquired information in decision-making.

E. Space information

64. The directory on Education, Training, Research and Fellowship Opportunities in Space Science and Technology and its Applications was updated and reissued in 1993 as document A/AC.105/548. The 1993 edition of Seminars of the United Nations Programme on Space Applications, the fourth in the series of selected papers from the activities of the Programme, was issued as document A/AC.105/568.

F. Promotion of greater cooperation in space science and technology

65. Most of the activities covered in the present report have clearly advanced regional cooperation in space science and technology. The following are noteworthy: the Second Space Conference of the Americas, held

at Santiago in April 1993; the Workshop on Space Communications for Development held at Athens in May 1992; the Regional Conference on Space Science and Technology for Sustainable Development held at Bandung, Indonesia, in May 1993; the Regional Conference on Space Technology for Sustainable Development in Africa held at Dakar in October 1993; the Workshop on Applications of Space Techniques to Prevent and Combat Natural Disasters held at Mexico City in September 1993; the efforts to establish the Asia-Pacific Satellite Communications Conference; and the efforts to regionalize and re-establish a self-sustaining Earth Observation Ground Receiving Station at Cotopaxi, Ecuador, for the benefit of the countries that are within the coverage area of the Station.

66. In addition, the association of the Programme with United Nations Secretariat units and specialized agencies, particularly United Nations Environment Programme (UNEP), UNESCO, FAO, ITU and WMO, with intergovernmental organizations, such as ESA, INTELSAT and INMARSAT, and with a number of non-governmental organizations, such as the Committee on Space Research (COSPAR) of the International Council of Scientific Unions (ICSU), IAF, International Society for Photogrammetry and Remote Sensing and TPS, is advancing cooperation between developed and developing countries, as well as among the developing countries.

67. The efforts of the Programme to establish the centres for space science and technology education will also reinforce regional cooperation, particularly among developing countries, and between developed and developing countries.

II. VOLUNTARY CONTRIBUTIONS

68. The successful implementation of the 1993 activities of the Programme benefited from the support and voluntary contributions of Member States of the United Nations and their institutions, as well as of regional and international governmental and non-governmental organizations. In 1993, the Programme received voluntary contributions, both in money and in kind, including the sponsorship of technical and scientific presentations by several experts, as detailed below:

(a) A number of Member States (Austria, Brazil, Canada, China, France, Germany, Greece, Indonesia, Italy, Mexico, Nepal, Nigeria, Pakistan, Spain, Sweden and United States of America) provided support for the activities of the Programme in 1993 in various ways, including the following:

(i) Defrayal of the local expenses of candidates from developing countries in the long-term fellowship programmes (see paras. 16-19 and annex II);

(ii) Voluntary cash contributions were received in 1993 from the Governments of Austria (20,000 United States dollars (US$)), Pakistan (US$ 15,000) and USGS (US$ 10,000);

(iii) Co-sponsorship of the activities of the Programme and, in particular, the defrayal of the costs of participants' international air travel, local organization and facilities, room and board, and local transportation (see paras. 35, 40, 44, 47, 50, 53, 56 and 57);

(iv) Sponsorship (travel and daily subsistence allowance) of experts from Member States to provide technical presentations and to take part in the deliberations (see paras. 41, 44, 47, 50, 53, 56 and 60);

(v) Funding of experts (France and Germany) to participate in the evaluation mission to Africa in order to provide an accurate and informative report that could assist in the establishment of centres for space science and technology education in that region;

(b) ESA support took the following forms:

(i) Defrayal of the local expenses of candidates from developing countries in its long-term fellowship programmes (see paras. 16 and 19 and annex II);

(ii) A financial contribution of US$ 85,000 in support of the workshops, training courses and conferences held at Dakar, Kathmandu, Lagos, Nigeria and Mexico City (see paras. 48 through 60), and of the United Nations/IAF Symposium organized in conjunction with the Forty-fourth Congress of IAF, held at Graz, Austria, in 1993;

(iii) A donation, through the Programme on Space Applications, of 30 personal computer systems for use in basic space science research at the universities and research institutes in Cuba, Ghana, Honduras, Nigeria, Peru and Sri Lanka;

(c) EOSAT (United States), MacDonald Dettwiler (Canada), and Telespazio (Italy) contributed amounts of, respectively, US$ 10,000, 5,000 Canadian dollars and US$ 10,000 in support of the Regional Conference held at Dakar. The Government of France and WMO each provided for the funding of four African participants (see paras. 57 through 60);

(d) ECE and IAF contributed amounts of, respectively, US$ 30,000 and US$ 25,000 to defray the costs of air travel and daily subsistence allowance for participants from developing countries in the United Nations/IAF Symposium held at Graz, Austria (see para. 68 (b) (ii));

(e) FAO, UNESCO, ITU, WMO, ESA, EUTELSAT, EUMETSAT, INMARSAT, INTELSAT, Comsat, Tongasat, USGS, TPS, MacDonald Dettwiler and Telespazio sponsored the participation of their experts (travel and daily subsistence allowance) as reflected in paragraphs 41, 44, 47, 50, 56 and 60.

III. FINANCIAL PROVISIONS AND ADMINISTRATION OF 1994 ACTIVITIES

69. The 1994 activities of the Programme covered in the present report will be implemented on the following basis:

(a) Financial provisions. Under the United Nations regular budget, a sum of US$ 443,200 was approved by the General Assembly at its forty-sixth session for implementing the activities of the Programme during the 1994-1995 biennium. Because the budgetary allocation is not sufficient to carry out the mandated and expanded activities of the Programme, it has become necessary for the Programme to solicit additional funds, in the form of voluntary contributions, in support of its activities. The contributions will be used to supplement the regular budget of the Programme;

(b) Administration by and contributions and participation of staff. The Office for Outer Space Affairs, and in particular the Expert on Space Applications and his staff, will carry out the activities described in the present report. In this connection, travel will be undertaken as appropriate by the Expert and his staff under the provisions of the biennium travel budget of the Office as approved by the General Assembly at its forty-eighth session and as may be necessary from voluntary contributions;

(c) Consultations, instructors, speakers and technical materials. Up to 25 specialists in space science and technology and its applications will be required to serve as instructors, speakers and consultants during the implementation of the 1994 activities of the Programme. Expenses incurred in respect of the travel and per diem of these specialists and for necessary technical materials will be met partly from the regular budget and partly from voluntary contributions received from Member States and international organizations.

IV. EVALUATION OF THE IMPACT OF SOME OF THE ACTIVITIES OF THE UNITED NATIONS PROGRAMME ON SPACE APPLICATIONS FOR 1990

70. It takes about one to three years for a candidate who has participated in the activities of the Programme to establish the necessary facilities and support at the local level before he or she could make meaningful use of the knowledge gained through participation in those activities. Thus, a survey of those who participated in the activities of the Programme in 1990 was carried out in 1993. The evaluation of the effectiveness of the Programme activities covered in the present report is based on information received as feedback from the participants. The results of the evaluation are described below.

71. In 1990, the activities of the Programme included one training course on remote-sensing education for educators, held at Stockholm and Kiruna, Sweden, and two workshops on space communications for development and microwave remote-sensing technology, held at Havana, and São José dos Campos, Brazil, respectively. In addition, the Programme financially supported and co-sponsored a United Nations/FAO/ESA International Workshop on Remote Sensing: Geo-Information Technology for Decision Makers, organized in cooperation with the Government of France and held at Rome.

72. On 8 March 1993, a questionnaire was sent to the 134 participants in those Programme activities in 1990. The statistical evaluation of the responses received is given below.

73. A total of 51 participants, out of the 135 that took part in the activities, responded to the questionnaire. The professional activities of several of the 51 participants have been in more than one area. Twenty-six of the respondents continued to work in remote sensing, 18 in forestry, 16 in environmental sciences, 15 in mapping, 14 in agriculture, 14 in communications, 7 in hydrology, 7 in geology, 5 in fisheries, 4 in mineralogy and 2 in meteorology. Their activities are summarized in table 1.

Table 1. Professional activities of Programme participants

Field	Number of participants
Research and development	22
Planning	27
Operational activities	20
Education	13

74. Table 2 gives the number of participants who expressed the view that their participation in the activities of the Programme had enabled them to initiate, establish, run or direct the different groups, facilities or activities indicated in their different professional fields in their own countries.

Table 2. Evaluation of benefits of participation in activities of the Programme

Activity or facility	Initiation	Establishment	Direction involved
	(number of participants)		
Study group	6	2	2
Coordination of user group	6	2	2
National committee	5	1	3
National programme	7	5	4
Regional and international cooperation	1	2	3
Data receiving station	2	1	3
Data analysis centre	2	3	4
Training facility	6	4	3

V. FOCUS ON YOUTH

75. In general, human activities are guided by and benefit from experience. Through the United Nations ISY essay contest on the topic "My vision of outer space and the promise it holds for my country and mankind", it became apparent that United Nations efforts to develop indigenous capability in space science and technology at the local level, particularly in the developing countries, should not be limited to the enhancement of the knowledge and skills of university educators and research and application scientists, but should also expose decision makers in the developing countries to the impact and implications of space exploration in social and economic development programmes, and should give recognition to the aspirations of the youth of the world to be part of this new frontier. Indeed, this frontier is theirs to shape and mould as the years go by. Their involvement in such an endeavour, in the formative stages of their lives, will adequately prepare them to face the challenges and the opportunities that lie ahead.

76. One of the United Nations ISY essayists, Dean Mischwski of Chanel College, New Zealand, wrote: "I find it hard to believe that the constraints of relativity will be irrevocable shackles, chaining us to our own solar neighbourhood. We will find a way to touch the stars, if only because God would not be so cruel as to put such a wondrous universe out there and then leave it forever beyond our reach." The youth of the world who contributed to this essay contest share the belief that space exploration will enhance human survival on Earth. They all subscribe to the idea that space holds the solution to many national, global, social and economic problems.

77. In recognition of this aspiration and yearning of the world's young people, the programme of the Regional Conference held in Indonesia (see A/AC.105/557) included a special student session during which four experts addressed over 250 students from Indonesian high schools and universities on various aspects of space science and technology including: space science and human society; the role of planetariums in the development of human resources in space science and technology; space transportation systems, past, present and future; and the Committee on the Peaceful Uses of Outer Space and its legal work. Similarly, during the Regional Conference held at Dakar (see A/AC.105/562) over 300 students from Senegalese schools

attended a youth forum, the aim of which was to enhance the interest of the youth of Africa in, and increase their understanding of, space science and technology, its various applications and the Earth's atmosphere.

78. The Programme on Space Applications is currently consulting with the appropriate entities on how to provide basic space-related education to the youth of the world in their formative years, particularly through elementary and secondary school programmes.

Annex I

ESTABLISHMENT OF THE REGIONAL CENTRE FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION IN LATIN AMERICA AND THE CARIBBEAN

1. At the conclusion of the first meeting of high-level technical managers from institutions that offered to host the regional Centre for Space Science and Technology Education in Latin America and the Caribbean, held at United Nations Headquarters on 20 September 1993 (see paras. 12 to 15 of the present report), Brazil and Mexico agreed on the following:

(a) The Centre is an essential need of the region and must therefore be established;

(b) In view of the many excellent capabilities of various institutions in Latin America and the Caribbean, a network arrangement is the most desirable structure for the Centre;

(c) Representatives of technical institutions in Brazil and Mexico should meet between October and November 1993 to discuss and agree on the details of the structure of the Centre, including the location of its headquarters and the composition of its Governing Board;

(d) On 9 and 10 December 1993, high-level representatives of Brazil and Mexico should meet with representatives of the Office for Outer Space Affairs at United Nations Headquarters in order to finalize arrangements regarding the establishment of the Centre, including the preparation of a timetable of activities necessary to develop its education programmes;

(e) The above-mentioned steps should be completed expeditiously so that the Centre could begin its first education programme in late 1994.

2. The views of the meeting, as outlined above, were presented to the representatives of Argentina, Chile, Canada, France, Spain and the United States during the second meeting on 21 September 1993. The representatives of Argentina and Chile agreed with the structure proposed for the Centre, and indicated their willingness to cooperate by offering educational programmes in specific areas at a future date. The representatives of the potential donor countries expressed their satisfaction with the results of the meeting, and indicated that once its detailed structure was presented, their countries would seek ways to support the Centre.

3. At a meeting held in Brazil, on 29 October 1993, the representatives of Brazil and Mexico reaffirmed their commitment to jointly establish the regional Centre for Space Science and Technology Education in Latin America and the Caribbean. In this connection, they agreed in principle on the following:

(a) The Centre should have two Campuses, one in Brazil and one in Mexico;

(b) The programmes of each campus should be autonomous;

(c) The Centre should have a secretariat which should perform a coordinating function;

(d) The Centre should have a Governing Board which should be its principal policy-making organ.

4. At meetings held in Mexico on 6 and 7 December 1993, the representatives of Brazil and Mexico reaffirmed the conclusions they had reached at the meetings held in New York and in Brazil, and agreed in principle on: the objectives of the Centre; the articles of administration of the Centre; and the organic

structure of the Centre, which should include the Governing Board, the Advisory Committee, the secretariat and two Campuses.

5. At meetings held in New York on 9 and 10 December 1993, the representatives of Brazil and Mexico met with a representative of the United Nations and agreed in principle on a draft agreement consisting of nine articles, which are summarized below:

(a) Article I addresses the establishment of the Centre as a regional network among appropriate institutions in Brazil and Mexico and other similar institutions in the region;

(b) Article II defines the objectives of the programmes of the Centre, with its initial emphasis on remote sensing, satellite communications, satellite meteorology and space information systems. Future phases of the programmes of the Centre will embrace the whole spectrum of space activities;

(c) Article III deals with the organic structure of the Centre as agreed on at the meetings held in Mexico;

(d) Article IV focuses on the composition and responsibilities of the Governing Board, including the election of its Chairman;

(e) Article V addresses the role of the Advisory Committee, which shall be defined by the Governing Board;

(f) Article VI calls on the Governing Board to appoint a secretary-general of the Centre and determine his or her functions and salary. The issue of the location of the secretariat is to be expeditiously resolved through bilateral negotiations;

(g) Article VII reinforces the autonomy of the two campuses and calls on the two Governments to appoint, with the concurrence of the Governing Board, the respective directors and establish the internal rules under which each campus shall operate. It also notes that each campus shall report to the Governing Board through the secretariat;

(h) Article VIII recognizes the invaluable contributions that donor countries can make to the success of the programmes of the Centre and its two campuses, and calls on donor countries to actively support the Centre and its two campuses;

(i) Article IX specifies that the agreement shall enter into force on the date on which Brazil and Mexico notify each other that they accept the legal requirements established therein.

6. It is understood that the agreement is subject to review by and concurrence of the Governments of Brazil and Mexico and the Office of Legal Affairs of the United Nations.

Annex II

LONG-RANGE FELLOWSHIPS OFFERED BY BRAZIL, CHINA AND THE EUROPEAN SPACE AGENCY WITHIN THE FRAMEWORK OF THE UNITED NATIONS PROGRAMME ON SPACE APPLICATIONS

Period	Country or organizations	Subject	Financial support by host country or organization	Fellowships offered	Candidates selected	Applications submitted	User countries (one or more candidates selected)
1994	Brazil	Research and applications in remote sensing	Subsistence allowance and medical and accident insurance	10	In February 1994	In progress	
1993-1994	China	Geodesy, photogrammetry and remote sensing	Subsistence allowance and medical insurance	4	4	10	Ghana Lao People's Democratic Republic Mongolia United Republic of Tanzania
1994	ESA	Satellite meteorology	Subsistence allowance	1	Nominations in progress	In progress	
1994	ESA	Space antennae and propagation	Subsistence allowance	1	Nominations in progress	In progress	
1994	ESA	Remote-sensing information	Subsistence allowance	1	2 each for six months	13	Malaysia
1994	ESA	Communications system	Subsistence allowance	1	Nominations in progress	In progress	
1994	ESA	Remote-sensing instrumentation	Subsistence allowance	1	Nominations in progress	In progress	

Annex III

UNITED NATIONS PROGRAMME ON SPACE APPLICATIONS: 1994 SCHEDULE OF COURSES, WORKSHOPS AND SYMPOSIA

Activities	Date and place	Objective	Status
United Nations/ESA Training Course for African Francophone Countries on the Monitoring of Natural Resources, Renewable Energy and Environment using the ERS-1 Satellite	18-30 April 1994 Frascati, Italy	To define and quantify what is required to facilitate remedial action and to strengthen national capacities in the management of environmental problems	24 participants to be funded by the United Nations Trust Fund for New and Renewable Sources of Energy Course being organized jointly by the United Nations (Department for Development Support and Management Services and the Office of Outer Space Affairs) and ESA
Fourth United Nations/Sweden International Training Course on Remote Sensing Education for Educators	2 May-10 June 1994 Stockholm and Kiruna, Sweden	To develop the knowledge and skills of university educators in remote-sensing technology	Confirmed Course already advertised globally
Fourth International United Nations/ESA Workshop on Basic Space Science	27 June-1 July 1994 Cairo	To strengthen basic space science in the developing countries	Confirmed by the Government of Egypt. Announcement on Workshop already issued. Workshop being co-sponsored by ESA
United Nations/COSPAR/ COSTED a/ Symposium on Space Technology for Development	July 1994 Hamburg, Germany	To examine new directions in promoting developing-country participation in the interpretation of space-borne atmospheric and remote-sensing data related to global and regional change through ground-based experiments that can be set up and maintained by countries with limited resources	Other potential co-sponsors include UNEP and the Third World Academy of Sciences
United Nations/Austrian Workshop on enhancing Social, Economic and Environmental Security through Space Technology	12-15 September 1994 Graz, Austria	To examine policy issues relating to space technology and sustainable development, taking into account the need for policy makers to ensure that space technologies are given high priority in national developmental policies	Funds being made available by the Government of Austria and the City of Graz
United Nations Training Workshop on Radar Remote Sensing Applications	14-18 September 1994 Beijing	To define and quantify what is required to facilitate remedial action and to strengthen national capacities in the management of environmental problems	Confirmed Workshop being co-sponsored by China, the Office for Outer Space Affairs, the Economic and Social Commission for Asia and the Pacific and ESA

Activities	Date and place	Objective	Status
Workshop on the Application of Space Techniques to Prevent and Combat Natural Disasters	September 1994 Harare	To address how African countries can develop databases and the use of GIS techniques to monitor disaster-related activities and problems	Under discussion with the Government of Zimbabwe Workshop being co-sponsored by the Government of Germany and ESA
United Nations/United States International Workshop on Spin-off Benefits of Space Technology: Challenges and Opportunities	September 1994 United States of America	To address the many new dimensions that are continuously being introduced into Earth-based processes and procedures, including the enhancement of scientific and technical capabilities made possible by space exploration and the opportunities for developing countries to participate in such efforts	Under discussion with the Government of the United States
United Nations/IAF/ESA Workshop on Space Activities for Economic Growth and Environmental Protection	6-9 October 1994 Jerusalem	To address how developing countries can actively participate in and derive significant benefits from the various aspects of space technology	Workshop being co-sponsored by ESA
United Nations Regional Workshop on Remote Sensing Applications of Radar Technology to Environmental and Natural Resources Sciences	November 1994 Lima	To enhance the capabilities of participants in the utilization of Earth observation data, particularly radar data, in the assessment of natural resources and management of environmental problems	Confirmed Workshop being co-sponsored by ESA
APSCC/Republic of Korea/United Nations Workshop on Satellite Communication	November 1994 Seoul	To provide opportunities for managers and specialists in satellite communications to forge cooperation programmes within the ESCAP region	Being organized by APSCC with the support of the Government of the Republic of Korea and the United Nations

a/ Committee on Science and Technology in Developing Countries.